CLAIMS

1. A black ink for inkjet recording, comprising an aqueous medium having dissolved or dispersed therein at least one dye in which λmax of the absorption spectrum in an aqueous solution is in the region from 500 and 700 nm and the half-value width in the absorption spectrum of a dilute solution standardized to an absorbance of 1.0 is 100 nm or more.

2. The black ink for inkjet recording as claimed in claim 1, which comprises an aqueous medium having dissolved or dispersed therein at least one dye in which λmax of the absorption spectrum in an aqueous solution is in the region from 500 and 700 nm and the half-value width in the absorption spectrum of a dilute solution standardized to an absorbance of 1.0 is 100 nm or more, and at least one dye contained in said ink has an oxidation potential positive than 1.0 V (vs SCE).

3. The black ink for inkjet recording as claimed in claim 1 or 2, wherein said ink comprises an aqueous medium having dissolved or dispersed therein at least one dye in which λmax of the absorption spectrum in an aqueous solution is in the region from 500 and 700 nm, the half-value width in the absorption spectrum of a dilute solution standardized to an absorbance of 1.0 is 100 nm or more, and the oxidation potential is positive than 1.0 V (vs SCE).

4. The black ink for inkjet recording as claimed in any one of claims 1 to 3, wherein when a black square symbol of JIS code 2223 is printed in a 48-point size and the density of a selected portion having a visual reflection density (D_{vis}) of 0.90 to 1.10 on the printed face is defined as the initial density and when this printed matter is enforcedly discolored by using an ozone discoloration tester capable of constantly generating 5 ppm of ozone and the enforced discoloration rate constant (k_{vis}) is determined by applying a first-order chemical reaction rule to the relationship of reflection density·time until the visual reflection density (D_{vis}) decreases to 80% of the initial density, the enforced discoloration rate

constant (k_{vis}) is 5.0×10^{-2} [$hour^{-1}$] or less.

5. The black ink for inkjet recording as claimed in any one of claims 1 to 4, wherein when a black square symbol of JIS code 2223 is printed in a 48-point size and the densities of selected C, M and Y three color portions each having a reflection density (D_R, D_G, D_B) of 0.90 to 1.10 as measured with status A filter light are defined as the initial densities and when this printed matter is enforcedly discolored by using an ozone discoloration tester capable of constantly generating 5 ppm of ozone and three enforced discoloration rate constants (k_R, k_G, k_B) are determined by applying a first-order chemical reaction rule to the relationship of reflection density·time until the reflection densities (D_R, D_G, D_B) decrease to 80% of respective initial densities, the ratio (R) of the maximum value to the minimum value of these three rate constants is 1.2 or less.

6. The black ink for inkjet recording as claimed in any one of claims 1 to 5, wherein the dye in which λmax of the absorption spectrum in an aqueous solution is in the region from 500 and 700 nm and the half-value width in the absorption spectrum of a dilute solution standardized to an absorbance of 1.0 is 100 nm or more is a dye represented by the following formula (1):

Formula (1):

$$A\text{-}(N{=}N\text{-}B_m)_n\text{-}N{=}N\text{-}C$$

wherein A, B and C each independently represents an aromatic or heterocyclic group which may be substituted, and m and n each represents 0 or an integer of 1 or more.

7. The black ink for inkjet recording as claimed in any one of claims 1 to 6, which comprises at least one compound represented by formula (A):

Formula (A):

$$X\text{-}Y\text{-}Z$$

wherein X represents a group represented by $-N(Q_1)\text{-}Q_2$, Z represents a group represented by $-N(Q_1)\text{-}Q_2$ or $-O\text{-}Q_3$, Y represents a group represented by $-W\text{-}(G)_k\text{-}(H)_n-$, W and/or H

represents a group represented by -CO-, $-SO_2-$ or $-PO(Q_4)-$, G represents a divalent linking group, Q_1 to Q_4 each represents a hydrogen atom, an amino group, an alkyl group, an alkenyl group, an alkynyl group, an aryl group, a heterocyclic group, a heteroaryl group, an alkoxy group, an aryloxy group, a heterocyclic oxy group, a heteroaryloxy group, an alkylamino group, an arylamino group, a heterocyclic amino group or a heteroarylamino group, X and Z may combine with each other to form a ring, and k and n each represents 0 or 1.

8. The black ink for inkjet recording as claimed in any one of claims 1 to 7, which further comprises at least one dye having λmax of the region from 350 to 500 nm.

9. The black ink for inkjet recording as claimed in claim 8, wherein the at least one dye having λmax of the region from 350 to 500 nm is a dye represented by formula (1).

10. The black ink for inkjet recording as claimed in claim 9, which comprises at least one dye having λmax of the region from 500 to 700 nm and the at least one dye having λmax of the region from 350 to 500 nm, wherein said dyes both have an oxidation potential positive than 1.0 V (vs SCE) and both are a dye represented by formula (1).

11. The black ink for inkjet recording as claimed in claim 9 or 10, which comprises at least one dye having λmax of the region from 500 to 700 nm and the at least one dye having λmax in the region from 350 to 500 nm, wherein said dyes both have an enforced discoloration rate constant (k_{vis}) defined in claim 5 of 5.0×10^{-2} [$hour^{-1}$] or less and both are a dye represented by formula (1).

12. The black ink for inkjet recording as claimed in any one of claims 1 to 11, which comprises at least one organic solvent not containing a heteroatom other than an oxygen atom.

13. The black ink for inkjet recording as claimed in any one of claims 1 to 12, which comprises an aqueous medium having dissolved and/or dispersed therein at least two dyes each having λmax of the region from 500 to 700 nm and the half-value width of 100 nm or more in the absorption spectrum of a dilute solution standardized to an absorbance of 1.0.

14. The black ink for inkjet recording as claimed in any one of claims 1 to 13, wherein a water-soluble organic solvent having a boiling point of 150°C or more is used.

15. The black ink for inkjet recording as claimed in any one of claims 1 to 14, wherein the organic solvent used for said ink comprises at least one organic solvent having a boiling point of 150°C or more and at least one organic solvent having a boiling point of 150°C or less.

16. The black ink for inkjet recording as claimed in any one of claims 1 to 15, which comprises: a water-miscible organic solvent having a boiling point of 100°C or more in an amount of 20 mass% or more based on the entire amount of the ink; and the compound represented by formula (A) in an amount of 0.02 to 2 mass% based on the entire amount of the ink.

17. An inkjet recording method comprising using the inkjet recording ink claimed in any one of claims 1 to 16.

18. The inkjet recording method as claimed in claim 17, comprising discharging ink droplets according to recording signals on an image-receiving material to record an image on the image-receiving material, the image-receiving material comprising a support having thereon an image-receiving layer containing inorganic white pigment particles, wherein the ink droplet comprises the ink for inkjet recording claimed in any one of claims 1 to 16.